

What is claimed is:

1. A method for making a coating composition comprising the non-sequential steps of:

mixing a binder in water to form a dispersion, said binder selected from the group consisting of polyvinyl alcohol, starches, latexes, polyvinyl pyrrolidone, and modified cellulose;

adding a cationic fixing agent to said dispersion, said cationic fixing agent selected from the group consisting of: acrylamide acrylic polymers, polyamines, polyethylene oxide, allylamine polymers, and quarternary ammonium polymers;

adding a pigment to said dispersion, at least a portion of said pigment comprising silica;

adding a styrene acrylic sizing agent to said dispersion to form the coating composition, wherein the composition has a pH value in the range of 4.5 to 7.

2. A method for making a coating composition as in claim 1 wherein the composition has a pH in the range of 4.5 -5.5.

3. A method for making a coating composition as in claim 1 wherein the coating composition has a solids content of at least 30% and is substantially free from grit.

4. A method for making a coating composition as in claim 1 wherein the coating composition has a solids content in the range of 35-38% and is substantially free from grit.

5. A method for making a coating composition as in claim 1 wherein:  
said binder comprises a low molecular weight, partially hydrolyzed polyvinyl

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alcohol binder; and

said cationic fixing agent comprises a polycationic quarternary ammonium polymer.

6. A method for making a coating composition as in claim 1 wherein:

the step of adding a pigment comprises adding a pigment comprising at least 50% non-agglomerated, absorptive silica pigment;

the step of mixing a binder in water comprises mixing 30-50 parts by dry weight of polyvinyl alcohol binder for every 100 parts by dry weight of pigment in water;

the step of adding a cationic fixing agent comprises adding 4-10 parts by dry weight of a polycationic quarternary ammonium polymer for every 100 parts by dry weight of pigment; and

the step of adding sizing agent comprises adding 1-10 parts by dry weight of sizing agent for every 100 parts by dry weight of pigment.

7. A method for making a coating composition as in claim 1, wherein the step of adding a sizing agent further comprises cooling said dispersion to a temperature of less than 49° C before adding said sizing agent.

8. A method for making an ink jet recording medium with a coating composition as in claim 1, further comprising the step of:

applying the coating composition to at least one side of a substrate in an amount to result in a finished coat weight of 7-13 gm/m<sup>2</sup>; and

drying said coating to form the ink jet recording medium.

9. A method for making an ink jet recording medium as in claim 8, wherein the step of applying the coating composition comprises applying the coating composition to both sides of said substrate.

10. A method for making an ink jet recording medium as in claim 8 wherein the step of applying the coating composition comprises applying the coating composition to a front side, and further comprises applying an anti-curl coating to a back side of the substrate.

11. A method for making a coating composition for coating a substrate for ink jet printing, the method comprising the non-sequential steps of:

mixing 30-50 dry weight parts of a partially hydrolyzed, low molecular weight polyvinyl alcohol binder in water to form a dispersion;

adding 4-10 dry weight parts of polycationic quarternary ammonium polymer fixing agent to said dispersion;

adding 100 dry weight parts pigment to said dispersion, at least 50% of said pigment comprising non-agglomerated, absorptive silica;

cooling said dispersion to a temperature of 49°C or less and then adding 1-10 dry weight parts of a styrene acrylic sizing agent to said dispersion; and

wherein the resulting coating composition has a pH in the range of 4.5 to 7, a solids content of at least 30%, and is substantially free from grit.

12. A method for making a coating composition as in claim 11 wherein the steps result in a coating composition having a pH in the range of 4.5 to 5.5 and a solids content in the

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range of 35-38%.

13. A method for making a coating composition comprising the sequential steps of:

mixing a binder in water to form a dispersion, said binder selected from the group consisting of polyvinyl alcohol, starches, latexes, polyvinyl pyrrolidone, and modified cellulose;

adding a cationic fixing agent to said dispersion, said cationic fixing agent selected from the group consisting of: acrylamide acrylic polymers, polyamines, polyethylene oxide, allylamine polymers, and quarternary ammonium polymers;

adding a pigment to said dispersion, at least 50% of said pigment comprising silica; and

adding a styrene acrylic sizing agent to said dispersion to form the coating composition.

14. A method for making a coating composition as in claim 13 wherein the coating composition formed by the steps has a pH value in the range of 4.5 to 7, a solids content of at least 30%, and is substantially free from grit.

15. A method for making a coating composition as in claim 13 wherein the coating composition formed by the steps has a pH value in the range of 4.5 to 5.5.

16. A method for making a coating composition as in claim 13 wherein the coating composition has a solids content in the range of 35-38% and is substantially free from grit.

17. A method for making a coating composition as in claim 13 wherein the method

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further comprises the step of cooling said dispersion to a temperature at or below 49°C prior to the step of adding said sizing agent.

18. A method for making a coating composition as in claim 13 wherein the method further comprises the step of cooling said dispersion to a temperature at or below 40°C prior to the step of adding said sizing agent.

19. A method for making a coating composition as in claim 13 wherein:

- the step of mixing a binder in water comprises mixing 30-50 parts by dry weight of polyvinyl alcohol binder for every 100 parts by dry weight of pigment in water;
- the step of adding a cationic fixing agent comprises adding 4-10 parts by dry weight of polycationic quarternary ammonium cationic fixing agent for every 100 parts by dry weight of pigment;
- the step of adding a pigment comprises adding a pigment comprising at least 50% non-agglomerated, absorptive silica; and
- the step of adding sizing agent comprises adding 1-10 parts by dry weight of sizing agent for every 100 parts by dry weight of pigment.

20. A method for making a coating composition as in claim 13, wherein the step of adding pigment to said dispersion comprises adding pigment comprising at least 10% alumina pigment and at least 50% silica pigment, and wherein said alumina pigment is added to said dispersion before addition of said silica pigment.

21. A method for making an ink jet medium with the coating composition of claim 13,

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further comprising the steps of:

applying the coating composition using a conventional coater to at least one side of a substrate to produce a finished coat weight of 7-13 gm/m<sup>2</sup>; and  
drying the composition to produce the ink jet recording medium.

22. A method for making an ink jet medium as in claim 21, wherein the step of applying the coating composition comprises applying the coating composition to both sides of the substrate.

23. A method for making an ink jet recording medium as in claim 21, further comprising the step of applying an anti-curl coat to the other side of the substrate.

24. A method for making a coating composition for coating a substrate for ink jet printing, the method comprising the sequential steps of:

adding 30-50 dry weight parts of a partially hydrolyzed low molecular weight polyvinyl alcohol binder per 100 parts of pigment to water to form a dispersion;

adding 4-10 dry weight parts per 100 parts of pigment of a polycationic quarternary ammonium polymer fixing agent per 100 parts pigment to said dispersion;

adding pigment to said dispersion, said pigment comprising at least 50% non-agglomerated, absorptive silica;

cooling said dispersion to at or below 49°C;

adding 1-10 dry weight parts styrene acrylic sizing agent per 100 parts of pigment to said dispersion to form the coating composition wherein the coating composition has a pH in the range of 4.5 to 7, a solids content of at least 30%, and is substantially free from grit.

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25. A method for making a coating composition as in claim 24, wherein the coating composition has a pH in the range of 4.5 to 5.5.

26. A method for making a coating composition as in claim 24, wherein the coating composition has a solids content in the range of 35-38%.

27. A method of making an ink jet recording medium comprising the non-sequential steps of:

adding 30-50 dry weight parts of a partially hydrolyzed low molecular weight polyvinyl alcohol binder per 100 parts of pigment to water to form a dispersion;

adding 4-10 dry weight parts per 100 parts of pigment of a polycationic quaternary ammonium polymer fixing agent per 100 parts pigment to said dispersion;

adding pigment to said dispersion, said pigment comprising at least 50% non-agglomerated, absorptive silica;

cooling said dispersion to at or below 49° C, then adding 1-10 dry weight parts styrene acrylic sizing agent per 100 parts of pigment to said dispersion to form the coating composition wherein the coating composition has a pH in the range of 4.5 to 7, a solids content of at least 30%, and is substantially free from grit;

coating said composition onto at least one side of a substrate to produce a finished coat weight of 7-13 gm/m<sup>2</sup>; and

drying said composition to form the ink jet recording medium.

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